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10/691,760	10/23/2003	Annette C. Grot	10004268-1	6707
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AVAGO TECHNOLOGIES, LTD. P.O. BOX 1920 DENVER, CO 80201-1920				
			EXAMINER WANG, QUAN ZHEN	
			ART UNIT 2613	PAPER NUMBER

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/691,760

Applicant(s)

GROT ET AL.

Examiner

Quan-Zhen Wang

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to because the drawings do not correctly illustrate the signal flow. For example, element 64 is a reflector that is a passive element. But the drawing shows that there are signals originated from the passive element 64. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

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2. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification, especially in the claims, is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are:

- a) In claim 4, "frequency aligning a transmitter laser with another of the channels of the tunable multi-channel device"; "frequency aligning a receiver laser with the other of the channels of the tunable multi-channel device"; and "transmitting an optical information signal from the one of the nodes to the other of the nodes at the frequency aligned with the other of the channels of the tunable multi-channel devices".
- b) In claim 5, "re-aligning the transmitter laser in frequency with the other of the channels of the tunable multi-channel device";
- c) In claim 6, "counting the number of channels between the one of the channels and the other of the channels".
- d) In claim 10, "generating non-absolute frequency reference signals frequency aligned with the channels of the tunable multi-channel device"; and "frequency aligning the one or more frequencies at which the optical information signals are transmitted and/or received with respective ones of the received non-absolute frequency reference signals".

- e) In claim 12, "frequency aligning the one or more frequencies at which the optical information signals are transmitted and/or received with respective ones of the channels of the tunable multi-channel device thereat".
- f) In claim 14, "at one of the nodes, a transceiver operable to transmit an optical information signal at a frequency aligned with another of the channels of the multi-channel device thereat; and at another of the nodes, a transceiver aligned in frequency with the other of the channels of the tunable multi-channel device thereat and operable to receive the optical information signal".
- g) In claim 19, "each of the nodes comprises a channel selector operable to frequency align the one or more frequencies at which the transceiver is operable to transmit and/or receive the optical information signals with respective ones of the non-absolute frequency reference signals received thereat".
- h) In claim 20, "remaining ones of the nodes each comprise a tunable multi-channel device, all the tunable multi-channel devices having mutually-identical channel spacings".

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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4. Claims 1-8, and 11-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 1, 11, and 13 recite the limitation of "... having channels with mutually-identical frequency differences". However, for any non-zero frequency differences, it is impossible to for channels to have "mutually-identical frequency differences". It is simply against the law of nature.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 3-5, 10, 12, 14, and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites the limitation of "The method of claim 1, in which the channels of the multi-channel device provided to at least some of the nodes differ in absolute frequency prior to the tuning." It is not clear what the cited limitation means. In addition, there is insufficient antecedent basis for the limitation of "the tuning".

Claim 4 recites the limitation of "at one of the nodes, frequency aligning a transmitter laser with another of the channels of the tunable multi-channel device thereat; at another of the nodes, frequency aligning a receiver laser with the other of the

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channels of the tunable multi-channel device thereat". However, it is not clear what is "another of the channels" and "the other of the channels".

Claim 4 recites the limitation of "transmitting an optical information signal from the one of the nodes to the other of the nodes at the frequency aligned with the other of the channels of the tunable multi-channel devices". However, it is not clear what is "the other of the nodes" and what is "the other of the channels of the tunable multi-channel devices".

Claim 5 recites "re-aligning the transmitter laser in frequency with the other of the channels of the tunable multi-channel device." However, it is not clear what is "the other of the channels of the tunable multi-channel device".

Claim 6 recites "counting the number of channels between the one of the channels and the other of the channels". However, it is not clear what is "the one of the channels and the other of the channels".

Claim 10 recites the limitation of "generating non-absolute frequency reference signals frequency aligned with the channels of the tunable multi-channel device". However, it is not clear what it means by "reference signals frequency aligned with the channels of the tunable multi-channel device".

Claim 12 recites the limitation of "frequency aligning the one or more frequencies at which the optical information signals are transmitted and/or received with respective ones of the channels of the tunable multi-channel device thereat". However, it is not clear what the cited limitation means.

Claim 14 recites the limitation of "at one of the nodes, a transceiver operable to transmit an optical information signal at a frequency aligned with another of the channels of the multi-channel device thereat; and at another of the nodes, a transceiver aligned in frequency with the other of the channels of the tunable multi-channel device thereat and operable to receive the optical information signal". However, it is not clear which frequency is aligned with which channel.

Claim 19 recites the limitation of "each of the nodes comprises a channel selector operable to frequency align the one or more frequencies at which the transceiver is operable to transmit and/or receive the optical information signals with respective ones of the non-absolute frequency reference signals received thereat". There is insufficient antecedent basis for the limitation of "respective ones of the non-absolute frequency reference signals" in the claim.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iida et al. (U.S. Patent Application Publication US 2002/0075539 A1) in view of Vujkovic-Cvijin et al. (U.S. Patent Application Publication US 2003/0039015 A1).



Regarding claims 1, 9, 13, and 18, lida discloses an optical communication network (fig. 6) in which interoperable optical frequencies are defined without an absolute frequency reference, the network comprising: means for distributing a non-absolute frequency reference to nodes of the network (paragraph 0212). lida differs from the claimed invention in that lida does not specifically disclose that a tunable multi-channel device generating channels with fixed channels spacing, and a control circuit operable to frequency align one of the channels of the multi-channel device thereat with the non-absolute frequency reference. However, a tunable multi-channel device generating channels with fixed channels spacing, and a control circuit operable to frequency align one of the channels of the multi-channel device thereat with the non-absolute frequency reference is well known in the art. For example, Vujkovic-Cvijin discloses a tunable multi-channel device (figs. 2-3) generating channels with fixed channels spacing, and a control circuit operable to frequency align one of the channels of the multi-channel device thereat with the non-absolute frequency reference (fig. 4, reference 404). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a tunable multi-channel device generating channels with fixed channels spacing, and a control circuit operable to frequency align one of the channels of the multi-channel device thereat with the non-absolute frequency reference, as it is disclosed by Vujkovic-Cvijin, in the system of lida in order to reconfigure the frequencies of the channels.

Regarding claim 2, and claim 14, as it is understood in view of the above 112 problem, lida further discloses exchanging optical information signals between two or

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more of the nodes at a frequency aligned with another of the channels of the tunable multi-channel device (fig. 6).

Regarding claim 3, as it is understood in view of the above 112 problem, Vujkovic-Cvijin further discloses the channels of the multi-channel device provided to at least some of the nodes differ in absolute frequency prior to the tuning (fig. 4).

Regarding claims 4-6 and 19-20, as they are understood in view of the above 112 problems, lida further disclose that the frequency of a channel from a transmitter and the frequency of the corresponding channel in a receiver are tuned to mach each other (fig. 6).

Regarding claim 7, Vujkovic-Cvijin further discloses providing to the nodes non-absolute frequency reference artifacts defining an identical frequency (fig. 2, reference gas).

Regarding claims 8 and 10, lida further disclose broadcasting a non-absolute frequency reference signal to the nodes (paragraph 0212).

Regarding claims 11 and 12, as they are understood in view of the above 12 problem, Vujkovic-Cvijin further discloses locating the tunable multi-channel device at one of the nodes (fig. 2-5); the channels of all the tunable multi-channel devices having fixed channel spacing (fig. 4); distributing the non-absolute frequency reference to each of the nodes and at each of the nodes, frequency aligning one of the channels of the multi-channel device thereat with the non-absolute frequency reference (fig. 4, reference 404).

Regarding claim 15, as it is understood in view of the above 112 problem, and claim 16, Vujkovic-Cvijin further discloses a light source; and a channel selector operable to align the light source in frequency with the other of the channels of the multi-channel device (figs. 2-3).

Regarding claim 17, Vujkovic-Cvijin further discloses the multi-channel device comprises a Fabry-Perot etalon (fig. 5, etalon 512) comprising a cavity, the cavity having a length; and each of the nodes comprises a control circuit operable to tune the etalon by adjusting length of the cavity of the etalon in response to a feedback signal indicative of a frequency difference between a resonance node of the etalon and the non-absolute frequency reference (fig. 5; paragraph 0054-0064).

Regarding claim 21, Vujkovic-Cvijin further discloses each of the nodes additionally comprises a channel selector (fig. 5, 530) operable to frequency align the one or more frequencies at which the transceiver is operable to transmit and/or receive the optical information signals with respective ones of the channels of the tunable multi-channel device thereat (paragraph 0054-0064).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quan-Zhen Wang whose telephone number is (571) 272-3114. The examiner can normally be reached on 9:00 AM - 5:00 PM, Monday - Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

qzw  
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